

## Modeling and Analysis of Clinical Care for Health Information Technology Improvement

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<b>Organization:</b>	University of Washington
<b>Mechanism:</b>	PAR: HS11-198: Understanding Clinical Information Needs and Health Care Decision Making Processes in the Context of Health Information Technology (IT) (R01)
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**Summary:** Electronic health records (EHRs) and associated applications of health information technology (IT) have great potential to reduce health care costs while increasing access and quality. However, EHR adoption faces resistance based on serious concerns such as high start-up costs, unpredictable benefits, and disruption to clinical care workflow. Many popular design paradigms for health IT focus on software features without explaining how these features will increase efficiency and quality. A well-designed health IT application with good usability will make routine performance of safe, efficient, and effective procedures the easiest course of action. Failure to incorporate these principles into health IT design produces unpredictable, even negative effects on clinical care. Yet unusable health IT applications that do not match workflow needs are so common that some physicians have adapted the term ‘shadow system’ to describe the temporary records that users create to compensate for the gap between the way the EHR organizes information and the way it is needed for the appropriate workflow of clinical care. Until health IT can reliably add value to care, its potential for controlling costs while improving quality will remain elusive.

The goal of this research is to understand and document how clinical work, including constraints of context and information resources, is actually accomplished and analyze how the efficiency and quality of care could be measurably improved, with an emphasis on health IT as the means. The project is modeling and analyzing clinical care workflows, networks, and decisionmaking at three sites: the Veterans Affairs Puget Sound Multiple Sclerosis Regional Program, the University of Washington Medicine Center for Pain Relief, and the Baylor Hospital Health Care Admissions Program.

### Specific Aims:

- Apply the techniques of contextual research and ethnographic research to discover and document the workflow of how clinical care is actually done for multiple sclerosis, and analyze how it could be improved with modern health IT using the Modeling and Analysis Toolsuite for Healthcare (MATH.) **(Ongoing)**
- Apply refined techniques to a second study site for a different area of chronic care, pain management, to begin understanding the generality of MATH for a specialty with referrals from both primary care and other specialists, and distinct coordination requirements for co-morbidities and treatment with narcotics. **(Upcoming)**

- Apply re-refined techniques to a third study site, the area of hospital admissions, with intensive care transitions that require inpatient care coordination, a large number of providers, non-scheduled care, and high fluctuations of workload and interruptions. **(Upcoming)**
- Identify the methodological principles that are general across all three domains for improving care with better health IT, and document our method for capturing, analyzing, and evaluating health IT improvement for the performance of clinical care. **(Upcoming)**

**2012 Activities:** The project moved through preparatory stages. Dr. Butler received institutional review board approval. Despite some delays related to purchasing the new version of the MATH software, training was held on schedule. The project team held the kick-off meeting with Veterans Affairs Puget Sound Multiple Sclerosis Regional Program, the first study site. The meeting included an overview of project objectives and ensured buy-in from managers. Dr. Butler has also begun working with Dr. Eric Eisenstein, Assistant Professor at Duke Clinical Research Institute's Outcomes Research and Assessment Group, to define innovative measures to evaluate the impact of new health IT on clinical workflows. As last self-reported in the AHRQ Research Reporting System, project progress and activities are mostly on track. The project budget funds are currently somewhat underspent due to delays in purchasing the newest version of the MATH software, which will be delivered in the second quarter.

**Preliminary Impact and Findings:** This project has no findings to date.

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**Target Population:** Chronic Care\*, Multiple Sclerosis, Veterans

**Strategic Goal:** Develop and disseminate health IT evidence and evidence-based tools to support patient-centered care, the coordination of care across transitions in care settings, and the use of electronic exchange of health information to improve quality of care.

**Business Goal:** Implementation and Use

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